REMARKS

In the Office Action, Claim 20 is rejected under 35 U.S.C. 112, first paragraph. Applicants respectfully submit that the rejection has been overcome or is improper for the reasons set forth below. Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made."

With respect this rejection, the Examiner essentially asserts that Claim 20 is not enabling such that one skilled in the art would not be able to make or use same without undue experimentation. Although Applicants do not agree with this position, in the spirit of cooperation and in response to the Examiner's suggestion, Applicants are providing evidence to further support Applicants' position that Claim 20 is clearly enabling.

In this regard, Applicants are submitting herewith the Affidavit of Andrew J. Malcolm pursuant to 37 C.F.R. 1.132 attached hereto as Exhibit 1. As clearly supported by the Affidavit, the present invention as required by Claim 20 can be practiced (e.g., made or used) by one skilled in the art without having to undergo undue experimentation. See, Malcolm Affidavit, paragraphs 1-12.

More specifically, based on Dr. Malcolm's review and understanding of the claimed invention as disclosed and supported in the specification, he has conducted an experiment to demonstrate that truncated recombinant pilin from various clinically relevant strains of *Pseudomonas aeruginosa* (PAK, PAO, K122-4, KB7 or P1) could act as a therapeutic to block bacterial adhesion to mucosal cells. The test recombinant pilin were engineered based on his knowledge as one skilled in the art and in view of what was disclosed in the Specification of the present application. For example, pages 9-11 of the Specification describes how recombinant pilin can be made. See, Malcolm Affidavit, paragraphs 5 and 6.

The test recombinant pilin included the amino acid sequence set forth in SEQ ID Nos. 4, 6, 8, or 10 as required by Claim 20. The PAK recombinant pili (PAK rec pili) included SEQ ID No. 4; the PAO recombinant pili (PAO rec pili) included SEQ ID No. 6; the P1 recombinant pili (P1 rec pili) included SEQ ID No. 8; and the KB7 recombinant pili (KB7 rec pili) included SEQ

ID No. 10. The K122-4 recombinant pili (K122-4 rec pili) included SEQ ID No. 2. See, Malcolm Affidavit, paragraph 7.

Based on his knowledge as one skilled in the art and in view of what was disclosed in the Specification of the present application, such as Example 5 on pages 13 and 14, the recombinant pilin were tested as follows. A 200 μL volume containing 200 μg of recombinant pili (PAK, or PAO, or K122-4, or KB7 or P1) was intraperitoneally (i.p.) injected into groups of 10 A.BY/SnJ mice (18 – 20 grams, 10 weeks). A BSA negative and a non-injected control group was also included. After one hour, a lethal dose of *P. aeruginosa* PAK wildtype, was administered intraperitoneally to these mice. The experimental protocol is illustrated below:

Pilin Adhesion Inhibition Experiment

Groups (10 A.BY mice/group)

1. i.p. Injected 200 µL 200 µg/mouse PAK rec pili 1 hour pre challenge*
2. i.p. Injected 200 µL 200 µg/mouse PAO rec pili 1 hour pre challenge*
3. i.p. Injected 200 µL 200 µg/mouse K122-4 rec pili 1 hour pre challenge*
4. i.p. Injected 200 µL 200 µg/mouse P1 rec pili 1 hour pre challgenge*
5. i.p. Injected 200 µL 200 µg/mouse KB7 rec pili 1 hour pre challenge*
6. i.p. Injected 200 µL 200 µg/mouse BSA 1 hour pre challenge*
7. Non Injected control*

*Groups 1 – 7 were i.p. challenged with *P. aeruginosa* strain PAK (0.77 x 10^6 cfu/mouse) bacteria. See, Malcolm Affidavit, paragraph 8.

Mice were then monitored for survival over a 48 hour period. As demonstrated in the survival graph (See, Exhibit C attached to Malcolm Affidavit), mice administered various truncated pilin (PAK, or PAO, or K122-4, or KB7 or P1) showed significant protection to bacterial challenge, non-injected or BSA control group mice showed little survival or little protection to bacterial challenge. This result indicates that the truncated pilin from PAK, or PAO, or K122-4, or KB7 or P1 bind to a common mucosal cell receptor. This binding blocks the adherence of *P. aeruginosa* bacteria and hence, in Dr. Malcolm's opinion, inhibits the initiation of the infection process. See, Malcolm Affidavit, paragraph 9.

The percent survival of the various mouse groups in this pilin adhesion inhibition experiment is shown in the table attached as Exhibit D to Dr. Malcolm's Affidavit. The mean survival times of mice treated with PAK or PAO or K122-4 or KB7 or P1 truncated recombinant pilin were significantly higher (38 – 42 hours) than the mean survival times of non-injected or BSA control mice (25 – 28 hours). The results of this experiment, in Dr. Malcolm's opinion, demonstrate that PAK, PAO, K122-4, P1 or KB7 recombinant pilin can block adherence of *P. aeruginosa* to mucosal cells thereby preventing bacterial colonization and the infection process. See, Malcolm Affidavit, paragraph 10.

Based on his review of the present application including pending Claim 20 and the written description and his knowledge as a skilled artisan, Dr. Malcolm was able to conduct an experiment without having to undergo undue experimentation that, in his opinion, demonstrates recombinant pilin can be used as a therapy or a combination therapy for the treatment of *Pseudomonas* bacterial infections as required by the claimed invention. See, Malcolm Affidavit, paragraph 11. Therefore, Applicants respectfully submit that Claim 20 is clearly enabling as supported in the Specification and thus fully complies with 35 U.S.C. 112.

Accordingly, Applicants respectfully request that this rejection be withdrawn.

With respect to the amendment to the Specification, Applicants believe that no new matter has been introduced. In this regard, upon further review of the application, the changes have been made to correct for mistakes of a clerical nature and/or a typographical nature. Therefore, Applicants respectfully submit that the changes be entered and approved.

For the foregoing reasons, Applicants respectfully request reconsideration of the patent application and earnestly solicit an early allowance of same.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Please cancel "c" at position 359 in Sequence ID No. 5 of the sequence listing and substitute "g" therefor.

Please cancel "Ser" at position 120 in Sequence ID No. 6 of the sequence listing and substitute "Cys" therefor.

Please cancel "c" at position 497 in Sequence ID No. 19 of the sequence listing and substitute "g" therefor.

Please cancel "Ser" at position 166 in Sequence ID No. 20 of the sequence listing and substitute "Cys" therefor.

Please cancel "c" at position 497 in Sequence ID No. 21 of the sequence listing and substitute "g" therefor.

Please cancel "Ser" at position 166 in Sequence ID No. 22 of the sequence listing and substitute "Cys" therefor.